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E74-10100

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TITLE: Remote Sensing Geophysics from Skylab

INVESTIGATION NO.: 487

PERIOD COVERED: November 1973

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(E74-10100) REMOTE SENSING GEOPHYSICS
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(Geological Survey) 3 p HC \$3.00

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Status during November

1. We have previously acquired aircraft multichannel scanner data (ERIM) at our Southern California test site which shows a number of high reflectivity anomalies in both the 1.0-1.4 and the 2.0-2.6 μm channels. Anomalous reflectance was not present in any of the other near IR and visible channels. In each case the anomalies were limited to volcanic rocks at least as mafic as andesites. The ages of the rocks varied from Oligocene through Holocene. A tentative explanation was made that the anomaly was due to the presence of limonite or hematite although the spectral match is only approximate.

During this month a photogeologic analysis of the Skylab S-192 data, by Howard Pohn, from channels 7 (0.87-0.88 μm) and 11 (1.55-1.75 μm) reveals that at least two reflectance anomalies are present in the volcanic rocks exposed in our Nevada site. Both anomalies appear black on the S-190 color photographs and are mapped as cinder cones on existing geologic maps.

The observation is interesting both because it confirms the possibility that the anomalies are widely distributed throughout volcanic rocks of the southwest and it demonstrates the value of the extended spectral range provided by the Skylab S-192 instrument. Our investigation is continuing both to identify additional anomalies and to determine the source of the anomalous reflectance. The effect may be caused by a change in surface state or iron enhancement due to either late stage (post eruptive) volcanic steaming or selective leaching of the surface materials by ground water movement.

2. We received an S-192 CCT for the first pass over our Nevada site.

Work has begun on attempting to decipher the data format.

3. A reprint of the thermal modeling paper is enclosed as promised in the October monthly report.

4. Examination of the RS-14 images acquired by the last aircraft overflight indicates the presence of broad dark and light bands (parallel to the scan lines). In its present form the data is not usable for thermal inertia analysis. Several zones of electronic glichies are also present on the data. These could be due to noise pickup from navigational gear such as transponders.

5. An impact statement was prepared on the effects of potential delays in delivery of Skylab data.

Requirements

1. No S-192 thermal data (either tape or film strip) has been received yet.

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